# (19) World Intellectual Property Organization

International Bureau





PCT

# (43) International Publication Date 5 April 2007 (05.04.2007)

(51) International Patent Classification: *A61B 17/34* (2006.01)

(21) International Application Number:

PCT/IB2006/053014

(22) International Filing Date: 30 August 2006 (30.08.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

60/721,094	28 September 2005 (28.09.2005)	US
60/763,003	26 January 2006 (26.01.2006)	US
60/762,789	26 January 2006 (26.01.2006)	US
11/360,251	22 February 2006 (22.02.2006)	US
11/360,251	• • • • • • • • • • • • • • • • • • • •	US

- (71) Applicant (for all designated States except US): DISC-O-TECH MEDICAL TECHNOLOGIES, LTD. [IL/IL]; 11 Hahoshlim Street, 46724 Herzelia (IL).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): BEYAR, Mordechay [IL/IL]; 7 Haeshkolit Street, 38900 Caesarea (IL). GLOBERMAN, Oren [IL/IL]; 30 Derech Haganim Street, 46910 Kfar-Shmaryahu (IL).
- (74) Agents: FENSTER, Paul et al.; Fenster & Company, Intellecutual Property Ltd., P. O. Box 10256, 49002 Petach Tikva (IL).

(10) International Publication Number WO 2007/036815 A3

- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

#### **Declaration under Rule 4.17:**

of inventorship (Rule 4.17(iv))

#### Published:

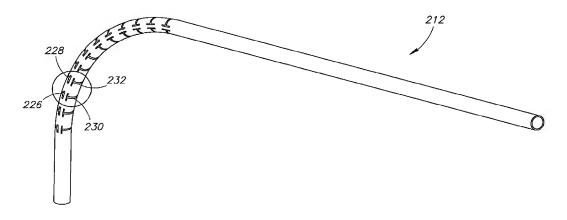
with international search report

 $(88)\;\; Date\; of\; publication\; of\; the\; international\; search\; report:$ 

13 September 2007

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: CANNULA FOR INJECTING MATERIAL INTO BONE



(57) Abstract: A bone cement cannula, the cannula comprising: a tube (212) including a section (224) for plastic deformation; and a lumen in the tube capable of resisting forces of a viscous material propelled therethrough at a pressure of at least 100 atmospheres. Alternatively a bone cement cannula (1002) with at least two inlet ports (730), (740) for a plurality of materials or entry of a stylet.



#### INTERNATIONAL SEARCH REPORT

International application No PCT/IB2006/053014

CLASSIFICATION OF SUBJECT MATTER NV. A61B17/34 ÎNV. According to International Patent Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) A61B A61F Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the International search (name of data base and, where practical, search terms used) EPO-Internal C. DOCUMENTS CONSIDERED TO BE RELEVANT Category\* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. X US 2004/260303 A1 (CARRISON H.F.) 1,10,12, 23 December 2004 (2004-12-23) cited in the application paragraphs [0002] - [0004], [0006], [0008], [0009], [0024], [0028], [0039], [0040]; figure 1 Υ 2-9,11, 19 WO 2005/051212 A (SOMATEX MEDICAL χ 1,10,12, TECHNOLOGIES) 9 June 2005 (2005-06-09) 13 Α page 10, line 23 - line 28; claim 3; 2-9,11, figure 1 X EP 1 464 292 A (DEPUY SPINE) 1,10,12, 6 October 2004 (2004-10-06) 13 paragraph [0034] A 2-9,11,19 -/--Further documents are listed in the continuation of Box C. X See patent family annex. Special categories of cited documents: "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the "A" document defining the general state of the art which is not considered to be of particular relevance invention "E" earlier document but published on or after the international "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such docudocument referring to an oral disclosure, use, exhibition or ments, such combination being obvious to a person skilled in the art. other means "P" document published prior to the international filing date but later than the priority date claimed "&" document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 20 March 2007 05/06/2007 Name and mailing address of the ISA/ Authorized officer European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Nice, Philip Fax: (+31-70) 340-3016

# INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2006/053014

C(Continua	tion). DOCUMENTS CONSIDERED TO BE RELEVANT	
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	DE 41 04 092 A (RIEGER C.) 14 August 1991 (1991-08-14) abstract; figures	2-4,6,8, 9,11,19 7
Υ	WO 96/19940 A (OMRIX BIOPHARMACEUTICALS) 4 July 1996 (1996-07-04)	5,7
A	page 8, line 10 - page 9, line 24; figures 3-6	2,6
Α	WO 2004/075965 A (SCIMED LIFE SYSTEMS) 10 September 2004 (2004-09-10) claim 5; figures 1,2,8-15,17,18	2-4,6,19
А	US 2004/054377 A1 (FOSTER T.L. & ROEMER F.D.) 18 March 2004 (2004-03-18) cited in the application	
A	US 5 514 137 A (COUTTS R.D.) 7 May 1996 (1996-05-07) column 17, line 18 - line 57; figures 11,12	
Α	US 2004/059283 A1 (KIRWAN J.M.) 25 March 2004 (2004-03-25) paragraphs [0035], [0060]; figure 10	
Α	EP 0 669 100 A (IMMUNO) 30 August 1995 (1995-08-30) column 5, line 3 - line 19	
A	WO 00/06216 A (KIRWAN J.M. ET AL.) 10 February 2000 (2000-02-10) abstract	

### International application No. PCT/IB2006/053014

### INTERNATIONAL SEARCH REPORT

Box II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)
This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1. X Claims Nos.: 20-21 because they relate to subject matter not required to be searched by this Authority, namely:
Rule 39.1(iv) PCT - Method for treatment of the human or animal body by surgery
Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)
This International Searching Authority found multiple inventions in this international application, as follows:
see additional sheet
1. As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:  See annex
Remark on Protest  The additional search fees were accompanied by the applicant's protest.  No protest accompanied the payment of additional search fees.

### FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-13,19

Deformable cannula, with a series of joints or a sleeve or sealing layer

2. claims: 14-18

Cannula with multiple inlet ports

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2006/053014

	tent document in search report		Publication date		Patent family member(s)		Publication date
US	2004260303	A1	23-12-2004	CA EP JP WO	2530946 1633262 2006527631 2005000138	A1 T	06-01-2005 15-03-2006 07-12-2006 06-01-2005
WO	2005051212	 А	09-06-2005	 AU	2003293699	A1	17-06-2005
~	1464202		06 10 2004	EP 	1596736		23-11-2005
	1464292 	A 	06-10-2004 	US 	2004193171 		30-09-2004
DE 	4104092 	A 	14-08-1991 	NONE			
WO	9619940	A	04-07-1996	AT AU DK ES JP	180154 4434396 800361 2132763 10511569	A T3 T3	15-06-1999 19-07-1996 08-11-1999 16-08-1999 10-11-1998
WO	2004075965	Α	10-09-2004	US	2004167437	A1	26-08-2004
US	2004054377	Α1	18-03-2004	NONE			
US	5514137	 А	07-05-1996	CA EP JP WO	2178507 0732900 9506021 9515732	A1 T	15-06-1995 25-09-1996 17-06-1997 15-06-1995
US	2004059283	A1	25-03-2004	AU CA EP JP WO	2003247666 2499107 1538990 2006500100 2004026145	A1 A2 T	08-04-2004 01-04-2004 15-06-2005 05-01-2006 01-04-2004
EP	0669100	A	30-08-1995	AT AT CA DE DK ES JP JP US	400304 41494 2143501 59504245 669100 2126240 3061741 7255729 5665067	A A1 D1 T3 T3 B2 A	27-12-1995 15-04-1995 29-08-1995 24-12-1998 02-08-1999 16-03-1999 10-07-2000 09-10-1995
	0006216	 А	10-02-2000	AU	5232899		21-02-2000